REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Office Action dated February 21, 2007. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

As outlined above, claims 1-8, 10 and 11 stand for consideration in this application, wherein claim 1 is being amended to correct formal errors and to more particularly point out and distinctly claim the subject invention.

All amendments to the application are fully supported therein, including Figs. 17(A) and (B) and page 36, lines 1-13 of the specification. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Interview Summary

A personal interview with the Examiner was conducted on June 18, 2007. Agreement between the Examiner and Applicants' representative was reached regarding the amendment of claim 1 to clarify the features of the claimed invention and distinguish the claimed invention from the prior art cited.

Prior Art Rejections

The First 35 U.S.C. §103(a) rejection

Claims 1-8 and 11 were rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Kaise et al. (U.S. Pat. 6,483,495) and Applicants Admitted Prior Art (AAPA) in view of Yamada (U.S. Pat. Pub. 2002/0158298). This rejection is respectfully traversed for the reasons set forth below.

Claim 1

Claim 1 as amended recites an image display device having an active matrix substrate provided with a pixel region having a plurality of pixels arranged in a matrix configuration, and a drive circuit region disposed outside of said pixel region for supplying drive signals to said plurality of pixels via interconnection lines, wherein said drive circuit region comprises

a plurality of stages of circuit sections successively processing an externally supplied display signal to produce a drive signal to be supplied to said pixel region, each of said plurality of stages of circuit sections having a different function, at least one of said plurality of stages of circuit sections is provided with active elements fabricated in discontinuous converted regions formed of roughly-band-shaped-crystal silicon films having grain boundaries, each of the grain boundaries being continuous in generally one direction, said active elements in the pixel region and said active elements in said drive circuit region are formed of a portion of a polysilicon film which are formed over a substantially entire area of said substrate of said image display device, and said active elements have a direction of movement of carriers therein in a direction of said grain boundaries.

Kaise does not expressly teach the active elements being fabricated in discontinuous converted regions formed of roughly-band-shaped-crystal silicon films having grain boundaries, each of the grain boundaries being continuous in generally one direction, and having a direction of movement of carriers therein in a direction of the grain boundaries.

The Examiner, however, asserted that AAPA discloses active elements being fabricated in discontinuous (the converted polysilicon film PSI has boundaries to be implemented in a limited size of a display, thus requires to be discontinuous at the boundaries) converted (converted from an "amorphous silicon film ASI" into a "polysilicon film PSI" by irradiating excimer laser light ELA on the "amorphous silicon film ASI") regions ("polysilicon film PSI") formed of roughly-band-shaped-crystal silicon films having grain boundaries continuous in generally one direction. Applicants respectfully disagree.

Contrary to the Examiner's assertion, the AAPA, namely, the description on page 4, lines 18-21 of the specification and Fig. 35 (B) does not show that discontinuous converted regions formed of roughly-band-shaped-crystal silicon films have grain boundaries continuous in generally one direction." Rather, the specification on page 4, lines 18-21 Fig. 35(B) describes that most grain boundaries of individual silicon grains are closed without break, and grain boundaries exist completely and continuously between adjacent silicon grains. In other words, AAPA shows that most grains are distributed in two dimensions, and each of the grain boundaries of the grains is in the form of a closed loop composed of plural curved or line segments oriented in random directions. In contrast, the discontinuous converted regions in the display device recited in claim 1 are formed of roughly-band-shaped-crystal silicon films which have grain boundaries and each of the grain boundaries is continuous in generally one direction. As illustrated in Fig. 17(B), roughly-band-shaped-

crystal silicon films depicted by SPSI have grain boundaries, each of which is continuous in generally one direction.

Furthermore, the Examiner asserted that AAPA discloses the active elements ("TFT") have a direction of movement of carriers (electrons or holes) therein in a direction of grain boundaries. Applicants respectfully disagree. As set forth above, AAPA shows the grain boundaries are not oriented in generally one direction, but are oriented in random directions.

Furthermore, the Examiner asserted that it is inherent that electrons move from a source to a drain in a transistor. Applicants respectfully disagree. Explanatory Fig. 1 (a) illustrates conceptual electron movements in grains as shown in Figs. 35(A) and (B). Explanatory Figure 1(b) illustrates electron movement added on a scanning electron micrograph of the grains as shown in Figs. 35(A) and (B). As shown in Explanatory Figs. 1 (a) and (b), electrons travel in a zigzag fashion when microscopically considered, because electrons are scattered at grain boundaries which intersect electron paths. In contrast, Explanatory Fig. 2(a) illustrates a conceptual electron movement in grains recited in claim 1. Explanatory Fig. 2(b) illustrates electron movement added on a scanning electron micrograph of the grains recited in claim 1. In the grains recited in claim 1, electrons travel without being disturbed by grain boundaries because no grain boundary intersects electron paths.

Therefore, AAPA does not show or suggest the elements recited in claim 1, namely, at least one of said plurality of stages of circuit sections being provided with active elements fabricated in discontinuous converted regions formed of roughly-band-shaped-crystal silicon films having grain boundaries, each of the grain boundaries being continuous in generally one direction.

The other secondary reference of Yamada fails to provide any disclosure, teaching or suggestion that make up for the deficiencies in Kaise and AAPA, with respect to at least one of said plurality of stages of circuit sections being provided with active elements fabricated in discontinuous converted regions formed of roughly-band-shaped-crystal silicon films having grain boundaries, each of the grain boundaries being continuous in generally one direction. Therefore, all the features of the invention as recited in claim 1 cannot be embodied in the prior art by combining the disclosures of Kaise, AAPA, and Yamada. Accordingly, claim 1 is not obvious in view of all the prior art recited.

Claims 2-8, 11

As to dependent claims 2-8 and 11, the arguments set forth above with respect to independent claim 1 are equally applicable here. The corresponding base claim being allowable, claims 2-8 and 11 must also be allowable.

The Second 35 U.S.C. §103(a) rejection

Claim 10 was rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Kaise, AAPA, Yamada in view of Nagata et al. (U.S. Pat. 6,118,505). This rejection is respectfully traversed for the reasons set forth below.

As to dependent claim 10, the arguments set forth above with respect to independent claim 1 are equally applicable here. That is, the combination of Kaise, AAPA and Yamada fails to teach all the elements recited in claim 1, upon which claim 10 depends. The further secondary reference of Nagata fails to provide any disclosure, teaching or suggestion that makes up for the deficiencies in any of Kaise, AAPA and Yamada. As such, the arguments set forth above with respect to claim 1 are equally applicable here. Claim 1 being allowable, claim 10 must also be allowable.

Conclusion

In view of all the above, Applicants respectfully submit that certain clear and distinct differences as discussed exist between the present invention as now claimed and the prior art references upon which the rejections in the Office Action rely. These differences are more than sufficient that the present invention as now claimed would not have been anticipated nor rendered obvious given the prior art. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application as amended is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to

contact the Applicants' undersigned representative at the address and phone number indicated below.

Respectfully submitted,

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